

Resource Management Systems



Natural Resources Conservation Service

Conservation Planning Course

Module 5 Resource Management Systems

Objectives

At the end of this module the participant will be able to:

1. Describe the Resource Management System (RMS) process.
2. Identify the RMS tools and their relationship to the three-phase, nine-step conservation planning process.

References

Field Office Technical Guide, Section V, Conservation Effects

Conservation Practice Physical Effects Matrices and A Users Guide to Implementing the Conservation Practice Physical Effects Process and Concepts

The National Planning Procedures Handbook (NPPH), 600.41 Support Guidance for Planning Step 5 - Formulation of Resource Management Systems, and 600.42 Support Guidance for Conservation Effects.

Training Aids

Participant Notebook, overhead projector, transparencies, flip chart

Method of Instruction

Presentation, Discussion

Pre-Course Reading

NPPH Sections 600.41 and 600.42

Total Time

1 hour (additional time if additional materials are covered)

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Introduction and Overview

Module 5 consists of an introduction and overview of the Resource Management System (RMS) process.

Instructor Note

Each state will need to decide how much additional material, other than what is covered in this module, needs to be presented on the RMS process when they go to Part 2 of the course. States should base this decision on the knowledge and experience of their employees in using the RMS process.

The RMS Process - Key Points

1. The RMS process is embedded in the NRCS three-phase, nine-step planning process. It is a thought process within a process.
2. The primary purpose of the RMS process is to develop sound resource management system alternatives without creating new problems. The process is applicable in the formulation of RMS alternatives for specific fields, conservation management units, or other planning areas.
3. The process can also be used to develop the guidance documents included in Section III of the Field Office Technical Guide. Conservation planners can then use the guidance documents to begin development of resource management system alternatives.

Relationship of the Planning Process and RMS Tools

The following table displays the relationship of the planning process and the RMS process tools.

Planning Process	RMS Tools	RMS Actions
Phase I		
<i>Step 1</i> Identify Problems	Conservation Practice Physical Effects (CPPE)	Provides a list of resource considerations, problems, practices, and effects
<i>Step 2</i> Determine Objectives		
<i>Step 3</i> Inventory Resources	Conservation Effects Worksheet—Conservation Effects for Decisionmaking (CED)	Documentation of benchmark conditions
<i>Step 4</i> Analyze Resource Data	Site Specific Practice Effects Worksheet (SSPEW)	Documentation of land uses, resources, resource considerations, and resource problems, practices, and site specific effects
Phase II		
<i>Step 5</i> Formulate Alternatives	CPPE, SSPEW Resource Management System Options (RMS Options)	Identification and display of conservation practices and effects on resources. Combining conservation practices into systems that adequately treat resource problems
<i>Step 6</i> Evaluate Alternatives	CED	Determination and display of the expected effects and impacts of RMS Options
<i>Step 7</i> Make Decisions	CED	Use of the CED by the client to evaluate options and select the desired option(s)
Phase III		
<i>Step 8</i> Implement the Plan		
<i>Step 9</i> Evaluate the Plan	CED	Comparison of actual effects to benchmark conditions and projected effects, and providing feedback into the FOTG, NPPH, policy, and programs

RMS Tools

There are four major RMS tools, when used and completed, that guide you through the RMS process.

The four major RMS tools include:

1. Conservation Practice Physical Effects (CPPE)
2. Site Specific Practice Effects Worksheet (SSPEW)
3. Resource Management System Options Worksheet (RMS Options)
4. Conservation Effects Worksheet - Conservation Effects for Decisionmaking (CED)

These tools are described as follows:

CPPE

The CPPE matrix is found in the Section V of the Field Office Technical Guide (FOTG). The CPPE displays in subjective detail the physical effects that conservation practices have on the natural resources. The CPPE covers all of the natural resources, the broad resource considerations, and the problems associated with those resource considerations. The physical effects noted are based on experience and available information. The effects on the CPPE generally apply to resource problems nationwide and may need to be modified to reflect local conditions.

The CPPE was developed nationally for a number of conservation practices to provide an example of how to display the effects on defined resource problems. Each state should develop effects for additional practices applicable to their needs.

The effects listed in the CPPE are displayed for general conditions nationwide or as modified by the state.

SSPEW

This worksheet uses the practices in the CPPE to develop a list of the most applicable conservation practices to address site specific identified or predictable resource problems while considering the client's objectives. It displays effects for only the identified resource problems that exist, are predicted in the planning area, or have influence off-site. This array of practices lends itself to a quick comparison of the relative value of each practice including both positive and negative effects on the resource problems identified.

It is not intended that this worksheet be completed for every plan. *

RMS Options Worksheet

This worksheet is used to group individual practices into combinations of practices that have the potential to solve the resource problems that were listed on the SSPEW. The different combinations of practices become RMS options when the quality and criteria in the FOTG have been achieved for all of the identified and predictable resource problems.

It is not intended that this worksheet be completed for every plan. *

Conservation Effects Worksheet - Conservation Effects for Decisionmaking (CED)

The conservation effects worksheet provides a logical way to present, compare, and discuss the effects of the benchmark situation to any proposed RMS options. The worksheet displays (1) the current treatment and practices, and their effects (benchmark conditions); (2) alternative treatment and practices, and the expected effects; and (3) the impacts of the alternative treatment and practices. The impacts are the differences between the effects of the current treatment and the effects of the proposed treatment.

- * The RMS process is a thought process that should be used in all planning situations. The SSPEW and the RMS Options Worksheet are not required for each conservation plan. Their use depends on the experience of the conservationist and the complexity of the planning situation. Once the RMS process is fully understood, only unique or complex situations warrant documentation of the complete process.**

A Summary of the RMS Process

- The RMS process tools help carry out the three-phase, nine-step planning process.
- The CPPE helps identify (1) resource considerations, (2) resource problems, (3) potential conservation practices, and (4) the effects of those practices if they are installed according to standards and specifications.
- The SSPEW helps document (1) existing and predictable resource problems, (2) conservation practices that could be used to treat those problems, and (3) the site specific effects of installing the practices.
- The RMS Options Worksheet helps group individual practices into combinations of practices that meet quality criteria for all of the resources at the RMS level.
- The CED Worksheet displays (1) the benchmark conditions and effects, (2) the proposed treatment alternatives, and (3) the expected effects and impacts of the proposed treatment.

Instructor Note

See the References section on page 1 of this module for locations of additional information.

Example CPPE:

This example shows the effects of two practices (conservation tillage, diversion), on four problems (sheet and rill, wind, ephemeral gully, classic gully), for one resource consideration (erosion), on one resource (soil). See the FOTG for a complete CPPE matrix.

RESOURCE: SOIL Conservation Practice Physical Effects — FOTG

CONSIDERATIONS:		(1) EROSION			
Problems ----- Practices		Sheet & Rill	Wind	Ephemeral Gully	Classic Gully
	Resource Problem/ Consideration Definition Other Explanations	The movement of soil from water forces, requiring treatment when the soil loss tolerance is exceeded.	The movement of soil from wind forces, requiring treatment when the soil loss tolerance is exceeded.	Concentrated flow channels along depressional water courses that begin where over-land flow, including rills, converge. Usually obscured by tillage operations.	Gullies are channels that may grow or enlarge from year to year by headcutting or lateral widening. They are too deep to be erased by normal operations.
Conservation Tillage (No Till)	Provides protective cover and reduces runoff.	Significant decrease because of increase in surface residue cover. *	Significant decrease because of increase in surface residue cover.	Significant decrease because of increase in surface residue cover.	Negligible to slight decrease because of reduced runoff
Diversion	An embankment/channel constructed across slope to divert water. May or may not be vegetated.	Negligible to slight decrease if slope length is reduced.	Negligible.	Slight to significant decrease because of interception of concentrated flow.	Slight to significant decrease because of interception of concentrated flow.

* The effects in each case relate back to the problem. In this case there is a significant decrease in sheet and rill erosion.

Example SSPEW: This example shows the effects of fourteen practices, on eight problems, on one field, for one land use, for three resource considerations, on one resource.

SITE-SPECIFIC PRACTICE EFFECTS				Client: Ira Farmer	Land Use: Cropland				
				Natural Resource					
				Soil:					
Field or CMU	3/ Conservation Practices	1/ Erosion ----- 2/ Sheet & Rill 4/ Sig. Dec.	Erosion ----- Ephemeral Gully Mod. Dec.	Erosion ----- Classic Gully Neg.	Condition ----- Tilth Mod. Dec.	Condition ----- Compaction Mod. Dec.	Condition ----- Excess Fertilizer Neg.	Condition ----- Excess Pesticides Sl. Inc.	Deposition ----- Off-Site Mod. Dec.
5	Conservation Tillage, No-Till	Sig. Dec.	Mod. Dec.	Neg.	Sl. Dec.	Neg.	Neg.	Sl. Dec.	Sl. Dec.
	Contour Farming	Mod. Dec.	Sl. Dec.	Neg.	Sl. Dec.	Neg.	Neg.	Neg.	Sl. Dec.
	Crop Residue Use	Sl. Dec	Neg.	Neg.	Sl. Dec.	Neg.	Neg.	Neg.	Sl. Dec.
	Diversion	Sl. Dec.	Mod. Dec.	Mod. Dec.	Sl. Inc.	Neg.	Neg.	Neg.	Mod. Dec.
	Field Border	Sl. Dec.	Sl. Dec.	Neg.	Neg.	Sl. Dec.	Neg.	Neg.	Sl. Dec.
	Grade Stab. Structure	N/A	Neg.	Sig. Dec.	N/A	N/A	N/A	N/A	Mod. Dec.
	Grassed Waterway	Neg.	Sig. Dec.	Mod. Dec.	Neg.	Neg.	Neg.	Neg.	Sl. Dec.
	Nutrient Mgt. (excess)	Neg.	Neg.	Neg.	Neg.	Neg.	Sig. Dec.	Neg.	Neg.
	Pest Mgt. (chemical)	Sl. Dec.	Neg.	Neg.	Neg.	Neg.	Neg.	Mod. Dec.	Neg.
	Stripcropping - Contour	Mod. Dec.	Mod. Dec.	Sl. Dec.	Sl. Dec.	Mod. Dec.	Sl. Dec.	Sl. Dec.	Mod. Dec.
	Terraces (storage)	Mod. Dec.	Sig. Dec.	Mod. Dec.	Mod. Dec.	Neg.	Neg.	Neg.	Sig. Dec.
	Underground Outlets	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces	Facilitates Terraces
	Wildlife Upland Hab. Mgt.	Sl. Dec.	Sl. Dec.	Sl. Dec.	Mod. Dec.	Mod. Dec.	Neg.	Neg.	Neg.
	Wildlife Water Facility	Neg.	Neg.	Neg.	N/A	N/A	N/A	N/A	Neg.

1/ Enter the broad resource considerations illustrated in the CPPE matrix located in Section V FOTG

2/ Enter resource problems that correspond to the resource considerations.

3/ Enter conservation practices from the FOTG that contribute toward solving the identified problems.

4/ Enter practice effects illustrated in the CPPE matrix or localized practice effects data sheets.

Effects on the **problem**: N/A = Not Applicable; Neg. = Negligible; Sl = Slight; Mod. = Moderate; Sig. = Significant; Dec. = Decrease; Inc. = Increase.

Example RMS Options Worksheet:

This example shows the effects of one alternative, on eight problems, on one field, for one land use, for three resource considerations, on one resource.

RESOURCE MANAGEMENT SYSTEMS OPTIONS			Client: Ira Farmer	Land Use: Crop		Natural Resource						
Field or CMU	3/ Conservation Practices	1/ Erosion 2/ Sheet & Rill 4/	Soil:		Erosion Classic Gully	Condition Tilth	Condition Compaction	Condition Excess Fertilizer	Condition Excess Pesticides	Deposition Off-Site		
5	RMS Option	4/	Erosion Ephemeral Gully									
	Crop Res Use 20%	+	O		O	O	O	O	O	O		
	Terraces (Storage)	+	+		+	+	O	O	O	+		
	Underground Outlet	F	F		F	F	F	F	F	F		
	Contour Farming	+	O		O	+	O	O	O	O		
	Nutrient Mgt.	O	O		O	O	O	O	O	O		
	Pesticide Mgt.	O	O		O	O	O	O	+	O		

- 1/ Enter the broad resource considerations illustrated in the CPPE matrix located in Section V FOTG
- 2/ Enter resource problems that correspond to the resource considerations.
- 3/ Develop RMS options by listing combinations of practices based on the "SSPEW."
- 4/ Express the effects of selected practices. Refer to CPPE matrix located in Section V FOTG (codes N/A,F,O,+, or -). Effects on the **problem**: N/A = Not Applicable; F = Facilitating; O = Slight or Negligible; + = positive; - = Negative.

Example Conservation Effects Worksheet

Benchmark Conditions	Desired Future Conditions (Client's Objectives)	Quality Criteria	Alternative Effects	Impacts (changes)	Meets or Does not meet DFC and QC
10 T/Ac/Yr Sheet & Rill Erosion	4	5	2	-8	Meets DFC Meets QC
30 % Ground Cover	60	80	70	+40	Meets DFC Does not meet QC
10 Parts per Billion Atrazine in Lake	1	3	2	-8	Does not meet DFC Meets QC

This worksheet can be used to relate Alternative Effects to Benchmark Conditions, Desired Future Conditions, Quality Criteria, and Alternative Effects in order to determine the Impacts and whether or not the proposed alternative meets Desired Future Conditions (DFCs) and Quality Criteria (QC).